APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/752,133	12/27/2000	Gilbert Neiger	042392.P9771	8717

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EXAMINER
DAS, CHAMELI

ART UNIT	PAPER NUMBER
2122	8

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)
Office Action Summary	09/752,133	NEIGER ET AL.
	Examiner	Art Unit	
	C.DAS	2122	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

> A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
> THE MAILING DATE OF THIS COMMUNICATION.
> - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
>   after SIX (6) MONTHS from the mailing date of this communication.
> - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
> - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
> - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
> - Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
>   earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2000* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
            application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6) ☐ Other: .

DETAILED ACTION

1.   Claims 1-30 are pending.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (a) the invention was known or used by others in this country, or patented or described in a printed
> publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3.   Claims 1-5, 7-18, 20-29 are rejected under 35 U.S.C. 102(a) as being anticipated by

Bugnion et al (Bugnion), US 6,075,938.

As per claim 1, Bugnion discloses

- creating a guest translation data structure to be used by a guest operating system for

address translation operations (col 6, line 6-35, abstract, lines 3-9, col 11 lines 1-5)

- creating an active translation data structure based o the guest translation data structure

(Col 6, lines 6-30, col 12, lines 6-38, col 11 lines 1-5, col 13 lines 43-65, col 14 lines 1-18)

- periodically modifying content of the active translation data structure to conform to

content of the guest translation data structure, the content of the active translation data structure

being used by a processor to cache address translation in a TLB (col 5 lines 1-14, col 6 lines 6-35, col 10 lines 65-67, col 11 lines 36- col 12 lines 1-32).

As per claim 2, Bugnion discloses:

- emulating functionality of the TLB in response to an address- translation operation performed by the guest operating system (col 12 lines 13-25, col 10 lines 55-67).

As per claim 3, Bugnion discloses:

- an event initiated and evaluating the cause event as claimed (col 10 lines 43-54, col 11, lines 15-35)

As per claim 4, Bugnion discloses:

- determining the event is causes by an inconsistency between the content of the active translation and guest translation data structure (col 11 lines 48-67)

For claim 5, (col 12 lines 26-38).

For claim 7 (col 11, lines 20-35).

For claim 8 (col 12, lines 13-39).

For claim 9 (col 15 lines 1-26).

For claim 10 (col 12 lines 26-38).

For claim 11 (abstract lines 1-9, Fig 3 and col 4 lines 25-38).

For claim 12 (col 9 lines 40-48, col 11 lines 1-7).

For claim 13 (col 11 lines 30-40).

As per claim 14, Bugnion discloses:

- a guest translation data structure to translate virtual memory addresses into physical

memory addresses, the guest translation data structure being managed by a guest operating

system ((col 6, line 6-35, abstract, lines 3-9, col 11 lines 1-5)

- an active translation data structure to contain data derived from content of the guest

translation data structure, the active translation data structure being managed by a virtual

machine monitor ((Col 6, lines 6-30, col 12, lines 6-38, col 11 lines 1-5, col 13 lines 43-65, col

14 lines 1-18, col 4 lines 13-38)

- a TLB to store address translation derived from the active translation data structure, the

TLB being managed by a processor (col 12 lines 13-25).

For claim 15

- VMM periodically modify content of the active translation buffer (col 5 lines 1-14, col 6

lines 6-35, col 10 lines 65-67, col 11 lines 36- col 12 lines 1-32, col 14 lines 9-17).

Claims 16-18 and 20-23 are rejected under the same reason set forth in connection of the

rejection of claims 3-5 and claims 8, 9, 11 and 12 respectively and further Bugnion discloses the

Virtual machine monitor (abstract).

Claims 24 is rejected under the same reason set forth in connection of the rejection of claim 24

and further Bugnion discloses a memory and a processor couple to the memory (Abstract).

Claim 25 is rejected under the same reason set forth in connection of the rejection of

claim 16.

For claim 26 (col 4 lines 39-50).

Claim 27 is rejected under the same reason set forth in connection of the rejection of claim 12.

Claim 28 is rejected under the same reason set forth in connection of the rejection of claim 1.

Claim 29 is rejected under the same reason set forth in connection of the rejection of claims 3, 4 and 5.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 6, 19, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bugnion et al (Bugnion), US 6,075,938 in view of Devine et al (Devine), US 6,397,242.

As per claim 6, Bugnion discloses modifying entries (col 14 lines 1-18 and col 12 lines 26-38). Bugnion does not specifically disclose comparing the content of the active translation data structure with the content of the guest translation data structure. However, Devine discloses comparing the content of the data structure and modifying the entries if not match as claimed (col 5 lines 35-58). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of invention was made to incorporate the teaching of Devine into the method of Bugnion. The modification would be obvious because one of the ordinary skill in the art would be

motivated to virtualize the systems in which the computer has a plurality of hardware processors

(Devine, col 7 line 1-30).

Claim 19 is rejected under the same reason set forth in connection of the rejection of

claim 6 and further Bugnion discloses the virtual machine monitor (abstract).

Claim 30 is rejected under the same reason set forth in connection of the rejection of

claims 3, 4 and 6.

6.   The prior art made or record and not relied upon is considered pertinent to applicant's

disclosure.

TITLE: Address control system for software simulation, US 4347565 A

TITLE: Method, system and computer program product for dynamically allocating large memory

pages of different sizes, US 6182089 B1

TITLE: Microprocessor with an architecture mode control capable of supporting extensions of

two distinct instruction-set architectures, US 5854913 A

TITLE: Translation buffer for virtual machines with address space match , US 5319760 A

TITLE: Computer system of virtual machines sharing a vector processor, US 5511217 A

TITLE: Method, system and computer program product for dynamically allocating large memory

pages of different sizes, US 6182089 B1

TITLE: Protection ring extension for computers having distinct virtual machine monitor and

virtual machine address spaces, US 5522075 A

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Chameli Das whose telephone number is 703-305-1339. The

examiner can normally be reached on Monday-Friday from 8:00 A.M. to 4:30 P.M. If attempts to

reach the examiner by telephone are unsuccessful, the examiner's supervisor Greg Morse can be

reached at 703-308-4789. The fax number for this group is 703-746-7239. An inquiry of

general nature or relating to the status of this application or proceeding should be directed to the

group receptionist whose telephone number is 703-305-9600.

Chameli C-Das

C. DAS

Patent Examiner

Art Unit: 2122

4/14/03